

CLAIMS

What is claimed is:

- SAC*
1. A method for fusing an optical fiber lens, comprising:
injecting light into an optical fiber;
detecting a diffraction pattern of the light exiting from a fiber lens at a proximal end
of the optical fiber; and
electro-fusing the fiber lens in response to the diffraction pattern.
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2. A method as claimed in claim 1, wherein the step of injecting the light into the
optical fiber comprises energizing a laser that is coupled to distal end of the optical
fiber.
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3. A method as claimed in claim 1, wherein the step of detecting the diffraction
pattern comprises detecting a far-field diffraction pattern.
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4. A method as claimed in claim 1, wherein the step of detecting the diffraction
pattern comprises positioning a two-dimensional detector optically in front of the fiber
lens.
5. A method as claimed in claim 1, further comprising analyzing a two-dimensional
distribution of the diffraction pattern.
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6. A method as claimed in claim 5, wherein the step of analyzing the diffraction
pattern comprised determining a ratio of a lateral size to a transverse size of the
diffraction pattern.
7. A method as claimed in claim 1, wherein the step of fusing the fiber lens comprises
exposing the fiber lens to an electrical arc.

- SAC*
8. A system for fusing an optical fiber lens, comprising:

a light source that injects light into an optical fiber;
a detector that detects a diffraction pattern of the light exiting from a fiber lens at a proximal end of the optical fiber;
an arc fuser that fuses the fiber lens; and
5 a controller that activates the arc fuser in response to the diffraction pattern detected by the detector.

9. A system as claimed in claim 8, wherein the light source comprises a laser that is coupled to a distal end of the optical fiber.

10. A system as claimed in claim 8, wherein the detector is positioned relative to the fiber lens to detect far-field diffraction pattern.

11. A system as claimed in claim 8, wherein the detector is positioned greater than 0.5 centimeters from the fiber lens.

12. A system as claimed in claim 8, wherein detector comprises a camera.

13. A system as claimed in claim 8, wherein the controller determines a two-dimensional distribution of the diffraction pattern.

14. A system as claimed in claim 8, wherein the controller determines a ratio of a lateral size to a transverse size of the diffraction pattern.

15. A system as claimed in claim 8, wherein the controller activates the arc fuser in a pulsed fashion until a desired diffraction pattern is detected by the detector.